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STUDY ON INTESTINAL PARASITIC INFECTION IN DIFFERENT AGE GROUP OF HUMAN IN JODHPUR, RAJASTHAN

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ABSTRACT:

Intestinal parasites are organism that live in gastrointestinal tract of animal including human. In human there are three types of intestinal parasites including tapeworm, roundworms and protozoans. Parasite infestation is a major public health problem. Parasite infestation is the common problem among children especially in underdeveloped areas. Objective of the study is to assess the knowledge about parasite infestation in different sex and age groups in various season. The infestations are much more prevalent in Rajasthan and this is one of the most common causes of acute diarrhea in children.

In Jodhpur city the highest percentage of infection of intestinal parasite was found to be 14.85% in Monsoon season followed by 12.29% in Winter season and 11.39% in Summer season.

In this investigation total 355 male (17.66%) and 98 female (6.52%) infected in various season during Year 2018-2019

The maximum percentage of infection was found 0-10 year age group is (43.92%) followed by 11 - 20 years age group (23.17%), and 21-30 years (11.47%). The minimum percentage of infection was found in 70 year above (0.66%) and 61 - 70 years age group (1.76%) and (3.97%) in 51- 60 years age group in Jodhpur city area. The Present investigation were carried out to study the infestation intestinal parasitosis including its prevalence with respect to the total number of host examined and infected according to their age group and sex in various season.

KEYWORDS:

INFESTATION, INTESTINAL, PARASITE, DISEASE, CHILDREN, SEASON.

INTRODUCTION

Intestinal parasitic infections are one of the major health menaces which has affected around 3.5 billion people and caused illness in around 450 million, majority being children. It has been reported that annually, two lakh deaths are caused due to these infections, mainly in developing countries. More than 1.5 billion people are infected with particularly soil-transmitted helminthic infections including 270 million preschool-age children and over 600 million school-age children. Amoebiasis, giardiasis, ascariasis, hookworm infection, and trichuriasis are the most common infections leading to iron-deficiency anaemia, chronic diarrhoea, seizures, portal hypertension, and impaired physical development in children along with other comorbidities.

Even, the intestinal commensals serve as indicators of the socioeconomic and sanitation conditions of a population, as they share the same mechanisms of transmission as that of protozoan parasites.

The magnitude of intestinal parasitic infections in patients with diarrhoea needs to be carefully monitored in the developing countries. Several studies have been undertaken in different parts of India and few parts of Rajasthan. These infections still continue to predominate and similar studies would definitely add to the existing knowledge of parasitic infections in patients suffering from gastrointestinal problems.

This study was aimed to determine the spectrum of parasitic infections in different age group in various season.

MATERIALS AND METHODS

The study was conducted within the municipal limits of Jodhpur city. It includes cases of intestinal parasitosis from the major hospitals i.e. AIIMS, Ummaid Hospital, Mathura Das Mathur Hospital, Mahatma Gandhi Hospital and various private health centers of Jodhpur city (Raj.). the investigations were carried out during July 2018 to June 2019. Only patients with proven intestinal parasitosis were included in the present series.

During the course of investigations, the age and sex of the host were noted who were found to be infected with intestinal parasitosis.

It is a retrospective study conducted in the Department of Zoology JNVU Jodhpur, between the period of July 2018 and June 2019. The records of routine stool examination carried out during the study period, were analyzed. Stool samples received from the patients in hospital. A total of 3512 cases of all age groups including 2010 males and 1502 females formed the study population. The demographic data of each case, i.e., age and sex along with

stool examination findings were noted. All stool samples were tested as per the routine laboratory protocol, which included gross and microscopic examination within one hour of its collection. In gross examination, the colour and consistency of the stool samples, presence or absence of mucus, blood, adult worms, and body segments of the parasites were noted. Stool samples were further examined microscopically in wet mount preparation of normal saline and Lugol's iodine after concentration, using formol-ether stool concentration technique. The presence of ova, larvae, cysts, and trophozoites of various parasites as well as other intestinal commensals were noted.

STATISTICAL ANALYSIS

The interpretation and analysis of the data obtained were done using Microsoft Excel. The quantitative data were expressed as percentages in tabular form.

RESULTS

Intestinal parasitosis is a disease which has global prevalence though it is a predominantly rife in tropical countries like India. This disease is much more prevalent in Rajasthan and is one of the most common causes of actue diarrhoea in children.

Studies on intestinal parasitic infection were carried out in various public and private health centers of Jodhpur City, Rajasthan from July 2018 to June 2019. The various parameters were observed and the results are as follows:–

The highest incidence of intestinal parasitic infection was found to be 14.85% in Monsoon season followed by 12.29% in Winter season and 11.39% in Summer season.

MONSOON SEASON

In the year 2018-2019, a total 1306 patients (710 males and 596 females) were examined in this season. About 194 (14.85%) patients i.e. 156 (8.11.94%) males and 38 (2.90%) females were found to be infected with at least one type of intestinal parasitic infection, as indicated in Table No. 1.

NUMBER OF HOST HAVING INTESTINAL PARASITIC INFECTION ACCORDING TO THEIR SEX:

IN THE YEAR 2018-2019

The infection patterns of both protozoan and helminth parasites in either sex in monsoon season during the year 2018-2019 are as follows: Table No.2

Total 156 males (21.97 %) and 38 females (6.37 %) were found to be infected with at least one type of parasite in this year during monsooon season. 51 males (32.69%) and 14 females (36.84%) were found to be infected with *G. lamblia.* 40 males (25.64%) and 6 females (15.78%) were found to be infected with *E. histolytica* 22 males (14.10%) and 5 females (13.15%) were found to be infected with *E. coli*. 20 males (12.82%) and 6 females (15.78%) were found to be infected with *A. lumbricoides*. Total 18 males (11.53%) and 4 females (10.52%) were found to be infected with *E. vermicularis. H. nana* was found in 4 males (2.56%) and 1 female (2.63%). *Trichuris trichiura* was found in 1 male (0.64%) and 1 female (2.63%). *Ancylostoma duodenale* was found in 1 female (2.63%) only.

NUMBER OF HOST HAVING INTESTINAL PARASITIC INFECTION ACCORDING TO THEIR AGE GROUP:

IN THE YEAR 2018–2019 TABLE NO.3

The total number of host infected with at least one type of intestinal parasite in the age group 0–10 years in 89 patients, followed by 38 patients in the age group of 11–20 years, 23 patients in the age group of 21–30 years, 19 patients in the age group of 31–40 years, 14 patients in the age group of 41–50 and 7 patients belonged to the age group of 51–60 years. 2–2 patients were from the age group of 61–70 years and 71 onwards.

The infestation of *Giardia lamblia* was highest in the age group of 0-10 years (27 patients) followed by 13 patients from the age group of 11–20 years. The lowest infection of *G. lamblia* was found in the age group of 51–60 years (4 patients). The highest infestation of *E. histolytica* was found in the age group of 0–10 years (18 patients), followed by 10 patients in the age group of 11-20 years. The lower infection patterns of E. histolytica were found in the age group of 61-70 years and above 71 onwards (2 patients each). no infestation was found in the age group of 51–60 years. The infestation of E. coli was spread over from age group of 0–10 years to the age group of 51–60 years with highest infection in the age group of 21–30 years (7 patients) and 6 patients in the age group of 0–10 years, 5 patients in the age group of 11–20 years, 4 patients in the age group of 31–40 years 3patients in the age group of 51-60 years. The lowest infection of *E.coli* was found in the age group of 41–50 years (2 patients). The infections of intestinal helminth were spread over the age group of 0–10 years to 31–40 years. The most prevalent helminth found was *Ascaris lumbricoides* with highest infection in the age group of 0–10 years (19 patients) to lowest infection in the age group of 21–30 years (1 patient). The infestation of *Enterobius vermicularis* was maximum in the age group of 0–10 years (16 patients)followed by 4 patient in the age group of 11-20 years. And lowest in the age group of 21–30 years (2 patient). The infection pattern of *H. nana* was found as 2 patients in the age–group of 0–10 years and 1–1 patients each from the age group of 11–20 years and 31–40 years and 41- 50 years.. no infestation was found in the age group of 21–30 years. The infection pattern of *Trichuris trichiura* was found as 1-1 patients each from the age–group of 0–10 years. and 21-30years. 1 patient were found to be infected with and *Ancyostoma duodenale* in the age group of 11-20years.

WINTER SEASON

In the year 2018, a total 854 patients (452 males and 402 females) were examined in this season. About 105 (12.29%) patients i.e. 87 (10.18%) males and 18

(2.10%) females were found to be infected with at least one type of intestinal parasitic infection, as indicated in Table No. 1

NUMBER OF HOST HAVING INTESTINAL PARASITIC INFECTION ACCORDING TO THEIR SEX:

IN THE YEAR 2018-2019

The infection patterns of both protozoan and helminth parasites in either sex in winter season during the year 2018–2019 are as follows Table No. 2

Total 87males (19.24%) and 18 females (4.47%) were found to be infected with at least one type of parasite in this year during winter season. 28 males (32.18%) and 4 females (22.22%) were found to be infected with G. *lamblia.*17 males (19.54%) and 8 females (44.44%) were found to be infected with *E. histolytica.* 25 males (28.73%) and 2 females (11.11%) were found to be infected with *E. coli.* 8 males (9.19%) and 2 females (11.11%) were found to be infected with *A. lumbricoides.* Total 6 males (6.89%) and I female (5.55%) were found to be infected with *E. vermicularis.H. nana* was found in 2 males (2.29%) and 1 female (5.55) whereas only 1 male was found to be infected with *Ancylostoma duodenale.*

NUMBER OF HOST HAVING INTESTINAL PARASITIC INFECTION ACCORDING TO THEIR AGE GROUP:

IN THE YEAR 2018–2019 TABLE NO. 4

The total number of host infected with at least one type of intestinal parasite in the age group 0–10 years is 38 patients, followed by 23 patients in the age group, of 11–20 years, 16 patients in the age group of 21–30 years, 8 patients in the age group of 31–40 years, 9 patients in the age group of 41–50 and 6 patients belonged to the age group of 51–60 years. 4 and 1 patient were from the age group of 61–70 years and 70 above respectively.

The infestation of *Giardia lamblia* was highest in the age group of 0–10 years (12 patients) followed by 7 patients in the age group of 21–30 years, 6 patients from the age group of 11–20 years The lowest infection of G. *lamblia* was found in the age group of 51–60 years and 61–70 years(1 patient each.).The highest infestation of *E. histolytica* was found in the age group of 0–10 years (8 patients), followed by 6 and 5 patients in the age group of 11–20 years and 21–30 years respectively. The lower infection –patterns of E. histolytica were found in the age group of 31–40 years and 701 above years (1 patient each). The infestation of E. coli was spread over from age group of 0–10 years to the age group of 61- 70years with highest infection in the age group of 0–10 years (7 patients), 5, 4 and 4–4 patients in the age group of 11–20 years, 21–30 years, 31–40 years and 41–50 years respectively. The lower infection patterns of *E.coli* were found in the age group of 61- 70 years (1 patient). The infections of intestinal helminth were spread over the age group of 0–10 years to 21–30 years. The most prevalent helminth found was *Ascaris lumbricoides* with highest infection in the age group of 0–10 years (5 patients) to lowest infection in the age group of 51–60 years and 61-70 years (1 patients). The infestation of *Enterobius vermicularis was* maximum in the age group of 0–10 years (5 patients) and lowest in the age group of 11–20 years (2 patients). l–1 patients each from the age group of 0–10 years, 11-20 years and 41-50 years. were found to be infected with *H. nana.* 1 patient was found to be infected with *Ancylostoma duodenale* from the age group of 61–70 years.

SUMMER SEASON

In the year 2018–2019, a total 1352 patients (848 males and 504 females) were examined in this season. About 154 (11.39%) patients i.e. 112 (8.29%) males and 42 (3.10%) females were found to be infected with at least one type of intestinal parasitic infectionas indicated in Table 1.

NUMBER OF HOST HAVING INTESTINAL PARASITIC INFECTION ACCORDING TO THEIR SEX:

IN THE YEAR 2018-2019-

The infection patterns of both protozoan and helminth parasites in either sex in summer season during the year 2018-2019 are as follows: Table No. 2

Total 112 males (13.20%) and 42 females (8.33%) were found to be infected with at least one type of parasite in this year during summer season. 35 males (31.25%) and 15 females (35.71%) were found to be infected with G. *lamblia.*29 males (25.89%) and 13 females (30.95%) were found to be infected with *E. histolytica.* 22 males (19.64%) and 6 females (14.28%) were found to be infected with *E. coli.* 10 males (8.92%) and 2 female (4.76%) were found to be infected with *Ascaris lumbricoides.* 10 males (8.92%) and 5 females (11.90%) were found to be infected with *E. vermicularis. H. nana* was found in 5 males (4.46%) and 1 female (2.38%). *Trichuris trichiura* was found in 1 male (0.89) only.

NUMBER OF HOST HAVING INTESTINAL PARASITIC INFECTION ACCORDING TO THEIR AGE GROUP:

IN THE YEAR 2018–2019– TABLE NO. 5

The total number of host infected with at least one type of intestinal parasite in the age group 0–10 years is 72 patients, followed by 44 patients in the age group of 11–20 years, 13 patients in thee age group of 21–30 years, 11 patients in the age group of 31–40 years, 7 patients in the age group of 41–50 and 5 patients belonged to the age group of 51–60 years. 2 patient were from the age group 61–70 years. The infestation of *Giardia lamblia* was highest in the age group of 0–10 years (26 patients) followed by 15 patients in the age group of 11–20 years. The lowest infection of G. *lamblia* was found in the age group of 51–60 years (1 patient). The highest infestation of *E. histolytica* was found in the age group of 0–10 years (18

patients), followed by 12 patients in the age group of 11–20 years. The lower infection patterns of E. histolytica were found in the age group of 61–70 years (1 patient). The infestation of E. coli was spread over from age group of 0–10 years to the age group of 61–70 years with highest infection in the age group of 11–20 years(10 patients). 6 patients was found to be infected from the age group of 31-40 years, The lower infection patterns of E. coli were found in the age group of 61–70 years (1 patient). The infections of intestinal helminth were spread over the age group of 0–10 years to 31–40 years. The most prevalent helminth found was *Ascaris lumbricoides* with highest infection in the age group of 0–10 years (8 patients) to lowest infection in the age group of 21–30 and 31-40 years (1 patients each). The infestation of *Enterobius vermicularis was* maximum in the age group of 0–10 years (13 patients) and lowest in the age group of 11–20 years (2 patients). 3 2, and 1 patients from the age group of 0–10 years, 11–20 years and 21–30 were found to be infected with *H. nana.* respectively. 1 patient from the age group of 11–20 years was found to be infected with *Trichuris trichiura*.

TABLE 1

TOTAL NO. OF HOST EXAMINED AND TOTAL NO. OF HOST INFECTED IN VARIOUS SEASON DURING YEAR 2018- 2019

Season	No. Of host examination			No. Of host. Infected		
	Male	Female	Total	Male	Female	Total
Monsoon	710	596	**1306**	156	38	**194**
Winter	452	402	**854**	87	18	**105**
Summer	848	504	**1352**	112	42	**154**
Total	2010	1502	**3512**	355	98	**453**

TABLE 2

INTESTINAL PARASITIC RATE IN EITHER SEX IN VARIOUS SEASON DURING YEAR 2018-2019

Infections	Monsoon			Winter			Summer		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
G.lamblia	51	14	**65**	28	4	**32**	35	15	**50**
E.histolytica	40	6	**46**	17	8	**25**	29	13	**42**
E.coli	22	5	**27**	25	2	**27**	22	6	**28**
A.lumbricoides	20	6	**26**	8	2	**10**	10	2	**12**
E.vermicularis	18	4	**22**	6	1	**7**	10	5	**15**
H.nana	4	1	**5**	2	1	**3**	5	1	**6**
T.trichiura	1	1	**2**	0	0	**0**	1	0	**1**
A.duodenale	0	0	**0**	1	0	**1**	0	0	**0**
Total Infection	156	38	**194**	87	18	**105**	112	42	**154**

TABLE 3

DISTRIBUTION OF INTESTINAL PARASITES IN RELATION TO THE NATURE OF INFECTION AND AGE GROUP IN MONSOON SEASON DURING YEAR 2018-2019 IN JODHPUR CITY

Nature of infection	Age group								
	0- 10	11-20	21-30	31-40	41-50	51-60	61-70	70 above	Total
	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No
G.lamblia	27 (30.33%)	13 (34.21%)	8 (34.78%)	7 (36.84%)	6 (42.85)	4 (57.14%)			65
E.histolytica	18 (20.22%)	10 (26.31%)	4 (17.39%)	5 (26.31%)	5 (35.71)		2 (100%)	2 (100%)	46
E.coli	6 (6.74%)	5 (13.15%)	7 (30.43%)	4 (21.05%)	2 (14.28)	3 (42.81%)			27
A.lumbricoides	19 (21.34%)	4 (10.38%)	1 (4.34%)	2 (10.52%)					26
E.vermicularis	16 (17.91%)	4 (10.52%)	2 (8.69%)						22
H.nana	2 (2.24%)	1 (2.63%)		1 (5.26%)	1 (7.14)				5
T.trichiura	1 (1.13%)		1 (4.34%)						2
A.duodenale		1 (2.63%)							1
Total Infection	**89**	**38**	**23**	**19**	**14**	**7**	**2**	**2**	**194**

TABLE 4

DISTRIBUTION OF INTESTINAL PARASITES IN RELATION TO THE NATURE OF INFECTION AND AGE GROUP IN WINTER SEASON DURING YEAR 2018-2019 IN JODHPUR CITY

Nature of infection	Age group								
	0 - 10	11-20	21-30	31-40	41-50	51-60	61-70	70 above	Total
	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No
G.lamblia	12(31.57%)	6 (26.08%)	7 (43.75%)	3 (37.5%)	2 (22.22%)	1 (16.66%)	1 (25%)		32
E.histolytica	8 (21.05%)	6 (26.08%)	5 (31.25%)	1 (12.50%)	2 (22.22%)	2 (33.33%)		1 (100%)	25
E.coli	7 (18.42%)	5 (21.73%)	4 (50%)	4 (50%)	4 (44.44%)	2 (33.30%)	1 (25%)		27
A.lumbricoides	5 (13.15%)	3 (13.04%)				1 (16.66%)	1 (25%)		10
E.vermicularis	5	2 (8.69%)							7
H.nana	1 (2.63%)	1 (4.34%)			1 (11.11%)				3
T.trichiura									0
A.duodenale							1 (25%)		1
Total Infection	**38**	**23**	**16**	**8**	**9**	**6**	**4**	**1**	**105**

TABLE 5

DISTRIBUTION OF INTESTINAL PARASITES IN RELATION TO THE NATURE OF INFECTION AND AGE GROUP IN SUMMER SEASON DURING YEAR 2018-2019 IN JODHPUR CITY

Nature of infection	Age group								
	0 - 10	11-20	21-30	31-40	41-50	51-60	61-70	70 above	Total
	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)	No
G.lamblia	26(36.11%)	15(34.09%)	4(30.76%)	2(18.18%)	2(28.57%)	1(20%)			50
E.histolytica	18(25%)	12(27.27%)	2(15.38%)	2(18.18%)	3(42.85%)	4(80%)	1(50%)		42
E.coli	4(5.5%)	10(22.72%)	5(38.46%)	6(54.54%)	2(28.57%)		1(50%)		28
A.lumbricoides	8(11.11%)	2(4.54%)	1(7.69%)	1(9.09%)					12
E.vermicularis	13(18.05%)	2(4.54%)							15
H.nana	3(4.16%)	2(4.54%)	1(7.69%)						6
T.trichiura		1(2.27%)							1
A.duodenale									0
Total Infection	**72**	**44**	**13**	**11**	**7**	**5**	**2**	**0**	**154**

DISCUSSION

The present study was carried out at various public health centers, private health centers and disease diagnotic centers of Jodhpur city. Total 3512 patients were examined for the evidence of intestinal parasitic infection. Out of the total patients examined 2010 (57.23%) were males and 1502 (42.76%) were females. These figures are not very significant statistically and mainly show the trend of general population where male children were brought to the health centers more frequently.

The maximum number (43.92%) of host population was under the age group of 0–10 years and 23.17% were under the age group of 11–20 years. 11.47% of host population was under the age group of 21–30 years. Likewise 1.76% and 0.66% of host population belonged to the age group of 61–70 and 71 above year. This shows that younger

children were brought to the hospitals and health centers more frequently than older ones.

Infection of parasites is Socio–economic status, environmental sanitation, personal habits and hygiene, ignorance and lack of education are the important factors which increases the incidence of the intestinal parasites. It varies from one geographical area to others depending upon the soil condition, rainfall, vegetation and atmospheric temperature. It also varies with the techniques employed in their detection.

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REFERENCES

1. Cazri Jodhpur (2018) weather report

2. Cazri Jodhpur (2019) weather report

3. Choubisa SL, Jaroli VJ, Choubisa P, Mogra N (2012) Intestinal parasitic infection in Bhil tribe of Rajasthan, India. J Parasit Dis. 2012 Oct;36(2):143-8

4. K.D. Chatterjee (2019) Book of parasitology

(protozoology and helminthology) in relation to clinical medicine 13th edition CBS publication New Delhi

5. Kavathia G, Pattani M, Chaudhary A, Joshi T, Mehta K. A prevalence study of intestinal parasitic infections in symptomatic children at tertiary care hospital in Rajkot city of Gujarat (India) IOSR J Dent Med Sci. 2016;15(5):13–15.

6. Kavathia G, Pattani M, Dharsandiya M, Chaudhary A, Joshi T. A prevalence study of intestinal parasitic infections in a Tertiary Care hospital in Rajkot city of Gujarat (India): A hospital based study. IOSR J Dent Med Sci. 2015;14(10):45–7

7. Kotian S, Sharma M, Juyal D, Sharma N. Intestinal parasitic infectionintensity, prevalence and associated risk factors, a study in the general population from the Uttarakhand hills. Int J Med Public Health. 2014;4(4):422–25

8. Kumar Saurabh, Nag VL, Dash S., Maurya AK, Hada, V, Agarwal R, Narula H and Sharma A study on Spectrum of Parasitic Infections in Patients with Diarrhoea Attending a Tertiary Care Hospital in Western Rajasthan, India 2017 Aug 1. doi: 10.7860/JCDR/2017/29001.10346

9. Mathur (1992) Prevalence of human intestinal parasites in Jodhpur, Rajasthan. Indian Journal of Parasitology 16(2): 187

10. Patel P, Vyas N Intestinal Parasitic Infection In Human Being In Jodhpur City, Rajasthan IJRAR June 2019, Volume 6 (2): 289-293

11. S Gopalakrishnan, V M. Anantha Eashwar, M Muthulakshmi, A Geetha Intestinal parasitic infestations and anemia among urban female school children in Kancheepuram district, Tamil Nadu 2018 Nov 7(6):1395-1400

12. W.H.O. (1967): Tech. Rep. Ser. No. 377.